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Undervalued and Overlooked: Sustaining Rural Livelihoods through Better Governance of Wetlands

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Wetlands in the Mekong region of Southeast Asia are central to the livelihoods of the majority of the rural population. While local people know this well, development planners often fail to appreciate the multiple functions of wetland ecosystems. As a result, the value of wetlands is consistently underestimated and their importance overlooked—and ultimately it is the rural poor who lose out.

Increasing awareness about wetlands is essential to improving their management, but it is not enough. Also needed are fundamental shifts in the ways that wetland resources are valued, and in the ways that decisions are made about who has access to those resources, how they are used and how they are managed.

This policy brief presents an agenda for improving the governance of wetlands in the Mekong region, building on studies undertaken by a network of research teams in Cambodia, Laos, Thailand and Vietnam.[1] It cites experiences in each of the four countries that give cause for concern, and documents some of the many examples of institutional innovation that provide signs of progress towards a vision of participatory, equitable and sustainable management of wetlands.

Beyond conservation: Wetlands and livelihoods in the Mekong region

Rivers, streams, lakes, rice fields, shrimp farms, inland flooded forests, swamps, coastal mangroves: all of these are wetlands. Yet, despite the importance of wetlands across the landscape, the term "wetlands" is relatively new—and often misunderstood (see Box 1). Most of the attention given to wetlands in the region has focused on conservation, particularly to protect habitat for migratory birds, freshwater dolphins and other rare and threatened species of animals. In part this is a legacy of the particular concerns that gave rise to the main international accord focused on wetlands, the Ramsar Convention (Convention on Wetlands of International Importance Especially as Waterfowl Habitat). In part it reflects the priorities of organizations that have promoted and provided assistance for wetlands conservation in the region. In many people's minds, wetlands management has become synonymous with biodiversity conservation in government-designated protected areas.

A wetlands perspective recognizes the central role of wetlands in rural livelihoods and the critical ecosystem services they provide.

Protecting biodiversity is indeed of critical importance and conservation areas must remain one element of an integrated approach to wetlands management. The focus of this report, however, is much broader. Our view is that a wetlands perspective—one which recognizes the central role of wetlands in rural livelihoods, the critical ecosystem services provided by wetlands, and the way these are affected by the actions of stakeholders across the landscape—is a necessary foundation for effective development planning. Not only is it important in order to achieve conservation goals more effectively, but it is also necessary to make progress in reducing poverty, improving

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Box 1. The meaning of wetlands

The formal definition of wetlands, as expressed in the Ramsar Convention, covers a broad range of ecological zones:

> "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres"[1]

How the concept is understood and applied in the Mekong region has much to do with the terminology employed, as no exact translation of "wetlands" exists in any of the national languages in the region that captures the broad range of meaning given by the Ramsar Convention. In Cambodia, when the term was introduced in the early 1990s, it was initially translated as *tumneap lich toek*, or "floodplain". This does encompass most of the country's wetlands, including much of the productive agricultural land in the country, but it does not extend to the coastal zone. Subsequently, the term *dambon dey saeum* has gained acceptance, with a meaning closer to "wetland zone", but it is still not widely understood by non-specialists. In Laos, the early term, *din tham*, was misunderstood by many as referring to any "wet spot", and has since been replaced with *din boliven nam*, literally "land where there is water". In Vietnam, the most common translation is *dat ngap nuoc*, which means "land with water on its surface". In any of the languages of the region (and, indeed, in English as well), it is usually necessary to establish the broad meaning of "wetlands" by referring to examples from a range of ecosystems and land uses.

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1. UNESCO, *Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, Iran 2.2.1971), as amended by the Protocol of 3 December 1982 and the Amendments of 28 May 1987, as of July 1994*. 1994, Office of International Standards and Legal Affairs, UNESCO.

food security and nutrition, and sustaining economic growth.

Wetlands underpin rural people's livelihoods in multiple ways. One of the most important direct uses of wetlands is rice cultivation in irrigated and seasonally-flooded areas, which provides the staple of people's diets throughout the region, and—particularly in Vietnam and Thailand—a major source of export revenue. Freshwater capture fisheries are also important throughout the region—most notably in Cambodia, where as much as 75 percent of animal protein in a typical diet comes from fish.[2] Aquaculture is expanding as well, particularly shrimp aquaculture in coastal Vietnam and cage fish culture in the Mekong Delta, along with pond and integrated rice-fish farming systems in southern Laos and throughout the region. Among other direct uses, wetlands provide grazing lands for water buffaloes, a source of wood and fibrous plants used as building materials, medicinal plants and foods gathered to supplement rural people's diets, and water for household use.

The indirect uses of wetlands are sometimes less obvious but no less important. Natural wetlands absorb floodwaters that could otherwise be disastrous during the wet season. Cambodia's Tonle Sap, for example, expands in surface area as much as four or five times; if not for this, Phnom Penh would be completely flooded every year (see Figures 1 and 2). The *Melaleuca* forests in Vietnam's Plain of Reeds offset any increased volume of flow in the Mekong River, which can reach as much as 15 times the dry-season norm. The floods bring benefits by replenishing the nutrient-rich sediment needed for the intensive agriculture of the region's river deltas, and helping to sustain fish-spawning habitats. Many types of wetlands provide a natural purification function by removing excessive nutrients and toxins that enter the water from agricultural, industrial and municipal sources. They help to recharge groundwater aquifers and, especially in the case of coastal mangroves, protect against erosion. Wetlands also serve important cultural functions, with the rivers and their seasonal cycles providing a focus for such water festivals

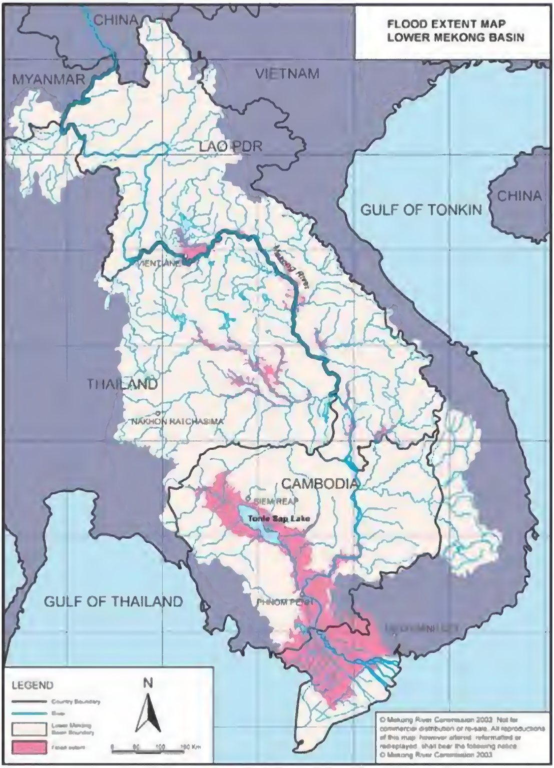


Figure 1. Lower Mekong River Basin river network showing estimated extent of flooding (based on data from 1995–2000). Source: Figure reproduced with adaptations from the original with permission from the Mekong River Commission (MRC).

as *Bon Om Tuk* in Cambodia and *Loy Kratong* in Thailand. In some areas, local people are beginning to realize the benefits of wetlands as tourist destinations. At Thailand's Kuan Khee Sian Ramsar site, for example, tourist services such as restaurants and souvenir shops have

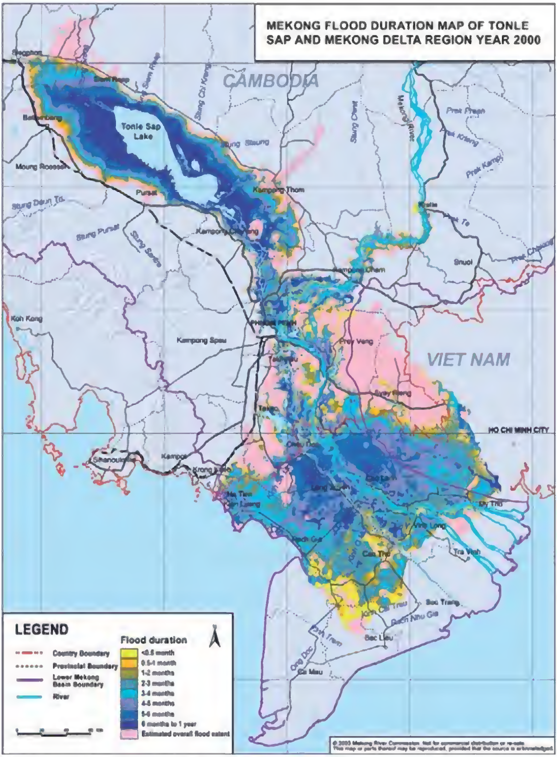


Figure 2. Tonle Sap and Mekong Delta region showing flood duration in 2000.
Source: Figure reproduced with adaptations from the original with permission from MRC.

surpassed direct extraction of fish and aquatic plants in terms of their importance to poor people's livelihoods. Tourists are also finding their way to such destinations as the Khone waterfall on the Mekong River in Laos and the freshwater dolphin habitat downstream in Cambodia's Stung Treng Province. Rivers, lakes and canals also support the economy

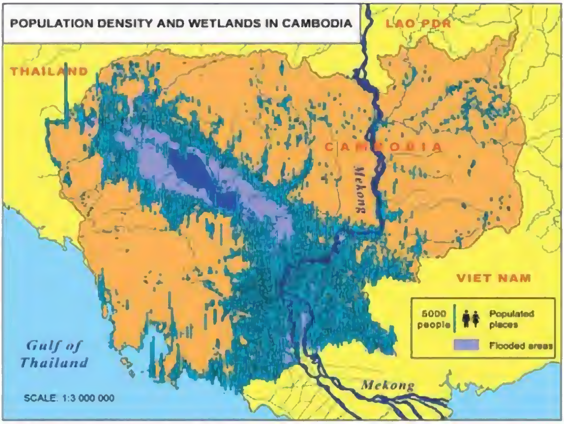
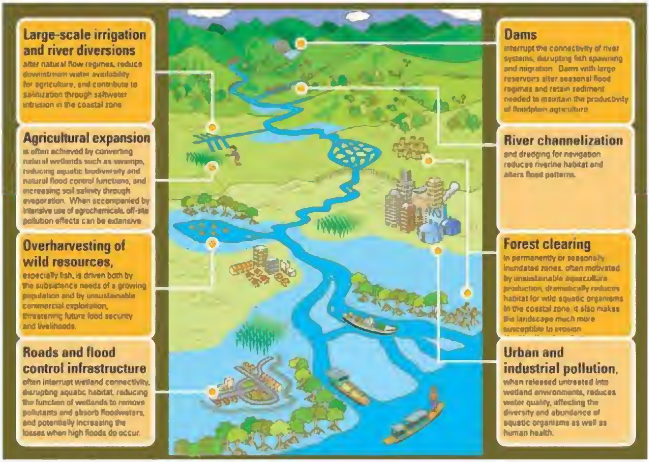


Figure 3. Distribution of people in Cambodia in relation to aquatic habitats (based on 1998 Cambodia census data). Source: Figure reproduced with permission from MRC and Hatfield Consultants Ltd.[3]

indirectly as routes for water transport—in some areas the only means of transport available for much of the year.

Because of their importance to local livelihoods, it is no surprise that the region's population is concentrated around rivers, permanent water bodies and seasonally-inundated zones. In Cambodia, for example, some 42 percent of the population lives within three kilometers of regularly flooded areas or the Mekong, Bassac, and Tonle Sap Rivers alone (see Figure 3). Vietnam's fertile Mekong and Red River Deltas have sustained exceptionally high population densities for centuries.

Yet, present development trends are placing the health of wetland ecosystems—and their ability to sustain the livelihoods of a growing population—at risk (see Figure 4). Major infrastructure projects, including dams, irrigation and river diversions, are of particular concern. A thorough appreciation of the importance of wetland ecosystems would lead not merely to improved impact assessment for such schemes, but in many cases would lead to stakeholders seeking alternative ways of generating energy or intensifying agricultural production that adapt to rather than fundamentally alter these natural systems. In a growing number of cases, local authorities have recognized the indirect economic value of natural wetlands only after they have been seriously compromised, motivating new efforts to protect and restore the ecosystem services wetlands provide. Having witnessed disease outbreaks and water pollution problems threaten the coastal shrimp aquaculture industry, the Thai government instituted a series of regulatory controls that include protecting and re-establishing mangrove forests. In Vietnam's Plain of Reeds, local governments are now spearheading efforts to replant *Melaleuca* forests after previously promoting their conversion for aquaculture and rice cultivation.



Large-scale irrigation and river diversions alter natural flow regimes, reduce downstream water availability for agriculture, and contribute to salinization through saltwater intrusion in the coastal zone

Agricultural expansion is often achieved by converting natural wetlands such as swamps, reducing aquatic biodiversity and natural flood control functions, and increasing soil salinity through evaporation. When accompanied by intensive use of agrochemicals, off-site pollution effects can be extensive

Overharvesting of wild resources, especially fish, is driven both by the subsistence needs of a growing population and by unsustainable commercial exploitation, threatening future food security and livelihoods.

Roads and flood control infrastructure often interrupt wetland connectivity, disrupting aquatic habitat, reducing the function of wetlands to remove pollutants and absorb floodwaters, and potentially increasing the losses when high floods do occur.

Dams interrupt the connectivity of river systems, disrupting fish spawning and migration. Dams with large reservoirs alter seasonal flood regimes and retain sediment needed to maintain the productivity of floodplain agriculture

River channelization and dredging for navigation reduces riverine habitat and alters flood patterns.

Forest clearing in permanently or seasonally inundated zones, often motivated by unsustainable aquaculture production, dramatically reduces habitat for wild aquatic organisms. In the coastal zone it also makes the landscape much more susceptible to erosion

Urban and industrial pollution, when released untreated into wetland environments, reduces water quality, affecting the diversity and abundance of aquatic organisms as well as human health.

Figure 4. How development trends affect wetland ecosystems.
Source: Figure based on original artwork from MRC and Hatfield Consultants Ltd.,[3] with adaptations and text additions.

Whose values count?

One of the challenges to improving development decisions regarding wetlands is that many of the ways in which poor people use wetlands are not well documented. Official government data on the natural resources sectors are typically biased towards direct uses that are transacted in formal markets and contribute significantly to the national economy. While systems are in place in each of the countries to estimate the annual rice crop and commercial fish catch, for example, information on non-timber forest products is scanty, as is information on frogs, snails, snakes, crabs and fish caught in rice fields. Also absent from official records are data on the harvesting of lotus, water hyacinth, water spinach, wild honey and other aquatic plants used for food, medicine, livestock feed and construction. Such oversights may seem minor, but in the aggregate they lead to serious misperceptions: one recent study estimated that the non-recorded fisheries production in the Mekong countries may be several times greater than the officially reported catch.[4]

Even data on commercial production can suffer from serious flaws, particularly in the case of capture fisheries. Officials in Laos, for example, admit that national-level production figures have historically been little more than rough estimations based on very limited data collection capacity. In Cambodia, official estimates of the fisheries catch are typically derived from records on the collection of taxes and other fees levied for transport and trade in fisheries products. But even these are widely known to be inaccurate because officials typically agree to record a low weight or value for purposes of the official payment so that an "unofficial fee" can be extracted on the side. One independent assessment that tracked fish traders transporting their products from the Tonle Sap to the Thai border found that the real value of the fish was four to ten times the recorded value.[5]

Assessing wetland values is also made difficult by patterns of seasonal variation, and by complex ecosystem linkages that scientists only partially understand. Seasonal variation applies not only to the wetlands systems but to the users as well. Many will travel long distances to collect fingerlings for aquaculture, or to take part in the fish harvest, or to gather particular plants from wetland forests, for example, during certain months of the year. Others may shift their efforts from rice farming to fishing to fish processing to poultry raising in a mix of livelihood strategies adapted to the cyclical changes in their local environment. When census recorders or household research surveys attempt to categorize respondents according to one "primary occupation", this picture of diversity is lost. In particular, the tendency is to overestimate people's reliance on the rice harvest for income and livelihood, and underestimate the importance of other wetland uses.

Scientists are able to characterize ecosystem linkages in general terms, but translating this understanding into reliable estimates of economic value in specific locales is time intensive and demands a depth of data that often is not available. According to the best global estimates, the combined direct and indirect human uses of rivers (US$8,498/ha) and other natural wetlands (US$14,785/ha) is many times that of any non-aquatic ecosystem (forests at US$969/ha or grasslands at US$232/ha),[6] and even these estimates are very preliminary. Many questions remain. For example, it is clear that mangrove forests support commercial shrimp farming by maintaining water quality and extracting pollutants. But how much pollution reduction does a hectare of mangrove provide? What is the value of this service in relation to shrimp production? What is the value in relation to capture fisheries in the near-shore coastal zone? Similar questions can be posed for services such as carbon dioxide absorption, nutrient retention, or protection against saltwater intrusion. Even where research in one locality has produced a rule of thumb, the variation among sites means that such findings must be applied very cautiously. The effects of disrupting some types of ecosystem services, moreover, may only be apparent at some geographic distance (downstream, down the coastline), later in time (years or decades), or when many small actions accumulate to push the system across a threshold.

For all of these reasons, development planners have often assumed that wetlands used and managed in a relatively natural state are worth little when weighed against the benefits of converting them to more "productive" uses. This undervaluation is sometimes explicit, when cost-benefit analyses or environmental and social impact assessments fail to consider the variety of wetland values that are compromised in the building of roads, dams, large agro-industrial schemes, or other major projects. More often, it is an unstated assumption that finds its way into policy and planning decisions. In either case, the result is that important negative externalities are ignored. Occasionally an investor suffers the consequences directly, as happened to many who cleared mangroves in Cambodia for coastal shrimp farming in the early 1990s only to have their operations wiped out by disease.[7] Typically, however, such externalities are borne by society at large, and disproportionately by the poorer wetland users whose health and daily incomes depend upon a functioning ecosystem.

Present development trends are placing the health of wetland ecosystems—and their ability to sustain the livelihoods of a growing population—at risk.

While better information about the diversity of wetland values will show some development decisions to be clearly unwise on environmental, economic and social grounds, in other cases it will simply highlight the trade-offs that need to be considered. Some developments, such as small-scale irrigation, may enhance wetland values in some locations while reducing them in others (see Box 2). Even where the benefits of proposed developments are widely shared, certain groups will profit more than others, and certain groups will bear the costs. When development impacts

Box 2. The impacts of irrigation: Tracing changes in the rice-field fisheries of southern Laos

The lowlands of Savannakhet and Champassak Provinces in Lao PDR are among the country's prime rice-growing regions; together the two provinces account for one third of national rice production. Yet, rice cultivation is only one means by which local families derive their livelihoods from the natural environment. Nearly all farmers, in the lowlands and in the upper watersheds alike, also engage in part-time fishing.

In order to achieve self-sufficiency in rice production, the Lao government is promoting a variety of schemes to expand irrigation, which currently reaches less than five percent of all cultivated areas. Experience in many countries has shown that while irrigation brings broad benefits to farming communities, it can be detrimental to river fisheries with significant negative environmental impacts on species diversity and abundance. In Laos, environmental impact assessments are required for large dam projects, typically designed primarily for hydroelectric power generation. But very few medium and small dam projects currently undergo formal impact assessments, meaning there is little chance for researchers to influence the design of such projects or incorporate mitigation measures.

Even within the global research literature, reliable, quantitative impact assessments of small and medium-sized irrigation schemes are rare. A field study carried out in Savannakhet, Champassak and the neighboring, more mountainous Kammouane Province, is thus innovative in its attempt to measure the impacts of irrigation schemes on capture fisheries in rice-based farming systems. The study, a collaboration between a research team from Imperial College, London, and the Regional Development Committee for Livestock and Fisheries in Savannakhet, used household surveys and detailed catch assessments in fishing areas affected by dam and weir schemes, paired with control sites in comparable agro-ecological settings in the same watersheds.[1]

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The impacts of water control structures on fisheries stem from changes introduced in the flow regime, including the connectivity of aquatic habitats in rivers, rice fields and associated wetlands. Dams, used mainly in the lowlands, have reservoirs that typically release water during the dry season, thus muting the natural variation between dry and wet-season flows. Weirs are relatively low in height and without significant holding capacity, and are used mainly in the upper watersheds to divert river water to irrigation canals. In the study area, which covered small and medium-sized irrigation schemes feeding paddy field areas from 3 to 346 hectares each, weir schemes were linked to a significant decline in fish catch per household and per unit area, that cannot be fully explained by a simultaneous decline

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in fishing effort. Dam schemes, by contrast, produced no overall decline in catch but a very significant redistribution of the fish catch to the newly created reservoirs.[2]

The study found that productive and biologically diverse fisheries can be sustained in combination with small and medium-sized irrigated rice systems, but it also flagged several issues that demand further attention. Perhaps more influential than the type of water control structure is the practice of water management in the cultivation cycle, as this affects the extent to which irrigated rice fields mimic the habitat characteristics of natural floodplains. Also essential is an understanding of the placement of irrigation schemes within the surrounding landscape. When set within relatively undisturbed river systems, the impacts of a single scheme may be minimal; however, the cumulative effect of many schemes could have a much more definitive negative impact on fisheries.

are experienced at some distance from the intervention site or even across national borders (transboundary impacts), achieving socially equitable decisions is especially complex. Understanding the challenges to improved governance of wetlands therefore also requires examining how the interests of different groups are represented in development decisions.

Whose decisions matter?

Decisions about the use and management of wetlands are framed within a legal and institutional context that gives no single organization full authority over the range of wetland ecosystem types or the spheres of economic activity relevant to their management. In each country, there is instead a wide range of actors with varying degrees of influence that need to be considered. While the particulars of the legal and institutional frameworks differ significantly between the four countries, the following observations capture some of the challenges commonly encountered and regionally relevant.

Distribution of authority often unclear

In none of the Mekong countries is there a dedicated legal code specifying roles and responsibilities in wetlands management. As in most countries around the world, relevant authority is instead designated in a variety of sectoral laws addressing land and forests and (in the case of Thailand and Cambodia) fisheries, as well as general environmental legislation. Thailand has adopted an action plan and related policy measures for wetlands management, focused on protected areas, but these do not have the status of law and are not backed by particular sanctions or enforcement authority. In Vietnam, a national wetlands strategy was first drafted in late 2002 by the Ministry of Natural Resources and Environment and approved by the Prime Minister in September 2003. In Cambodia, a national Wetlands Action Plan[8] was drafted under the leadership of the Ministry of Environment beginning in the mid 1990s; however, despite agreement among relevant ministries at a technical level, it has still not

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1 Nguyen Khoa, S., K. Lorenzen, C. Garaway, and Bounthanom Chamsingh. *Impacts of irrigation development on capture fisheries in the rice-based farming systems of Southern Laos.* Paper presented at the Second International Symposium on the Management of Large Rivers for Fisheries. Sustaining Livelihoods and Biodiversity in the New Millennium. 11-14 February 2003. Hotel Le Royal, Phnom Penh, Kingdom of Cambodia.

2. Ibid., pp. 9-10.

been formally adopted by the Council of Ministers as policy. In Laos, some officials have remained skeptical about developing a strategy for wetlands as such because of a perception that categorizing areas as "wetlands" implies that priority must be given to biodiversity conservation over human uses; the government is now cautiously assessing the implications of joining the Ramsar Convention.

One result of the lack of explicit attention to wetlands in the legal framework is that the formal division of authority for different aspects of wetlands management is often not clear, and sometimes contested. To some degree, this problem exists in all areas of "integrated natural resources management", but the ambiguity around the definition of wetlands combined with the seasonal variation in ecosystem characteristics makes the problem particularly pointed. This results in confusion about which government agency has responsibility, for example, over forests that are also integral parts of fisheries during the flood season. In Cambodia, this has led to institutional rivalries among agencies seeking the potentially lucrative authority to grant concessions or otherwise control access to public resources. To varying degrees in each of the countries, competing interests among agencies is an obstacle to implementing a coordinated approach.

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Most importantly, lack of clarity in the legal framework can lead to uncertainties about resource tenure that encourage destructive or inequitable uses. In Thailand, coastal communities have had difficulty protecting mangroves from conversion by outsiders when the areas have unclear boundaries or are public lands and no one can say definitively who has legal rights to their use. Before the reforms introduced in 2001 by the Prime Minister in Cambodia, some commercial fishing lot owners interpreted their concessions as giving them authority to deny fishing households the right to fish—even in the waters under their own homes. In Laos, private, communal and publicly managed aquatic resource areas are recognized by law; however, in some areas management responsibility is not clearly defined. Flexibility in the legal system can be good when it provides stakeholders with room to maneuver in developing locally appropriate management strategies, but safeguards need to be in place so that the interests of poorer households and communities are not marginalized.

Support to local institutions usually inadequate

Each of the four countries has made a commitment to devolve significant authority for natural resources management from state to community and from central to more local levels of government. Thailand's adoption of a new constitution in 1997 and the subsequent Decentralization Act in 1999 brought about the most systemic of decentralization reforms, locating a range of decision-making powers with the sub-district government units known as Tambon Administrative Organizations (TAOs). Cambodia has taken a more gradual approach, supporting provincial, district, commune and village development committees, first in selected provinces and then nationwide through the Seila program, a government initiative to promote local economic development activities through decentralized planning and decision making. The Cambodian government has also introduced a major shift toward community fisheries, but the implementing legislation has yet to be adopted. In Laos, the legal recognition of communal resource tenure in forests and fisheries is well established; in practice, considerable leeway is granted to local authorities, who interpret national law in a local context based on negotiated agreements with village leaders.

The trend toward devolving resource management authority holds significant promise for decision making that is more responsive to local needs. But it must be complemented both by a legal framework that supports local institutions, and by actions from government that back up such legal principles. In the densely populated floodplains and coastal zones of Vietnam, traditional community-based resource management institutions outside of the formal structures of commune and village-level governance are rare (in contrast to the upland and mountain areas, where they are common among ethnic minorities). Recent efforts to develop community-managed fish sanctuaries or to negotiate community access rights in newly established protected areas highlight the need to clarify the scope for establishing local regulations and the way such regulations will be enforced. Cambodia faces a similar problem, but on a much broader scale. The policy initiative to release commercial fishing lots for community use has effectively opened access to all, while community fisheries organizations still have no clear legal mandate, ambiguous authority, and little means of asserting their rights in the court system (see Box 3).

Negotiating the fit between traditional community tenure regimes and more recent legislation for resource management and conservation is especially important in Thailand and Laos. In Thailand, the decentralization reforms are intended to increase local authority by requiring, for example, that TAOs approve government management plans or infrastructure development proposals in their jurisdiction before they are put into practice. However, it remains to be seen how well the new organizations represent the interests of traditional tenure holders. It is also unclear to what extent laws on the establishment of "non-hunting areas", for example, affect prior use rights and restrictions traditionally upheld by local communities. In Laos, customary law has remained the primary basis for local resource management decisions in many parts of the country where the influence of government in general and its enforcement capacity in particular are very limited.

Mechanisms for public accountability often poorly implemented

Many examples point to an expansion of mechanisms for public participation in government planning and policy initiatives regarding wetlands. In Cambodia, an impressive series of provincial and national-level consultations were undertaken on proposed fisheries legislation, organized through a unique collaboration between the government, Oxfam and many other non-governmental organizations (NGOs). In Vietnam, the government has declared its commitment to increasing "grassroots democracy", and mass organizations (such as the Women's Union, Farmers' Associations and the Youth League) function as important channels for promoting and implementing new policy decisions. In Laos, the co-management approach to resource management, entailing cooperation between government, communities and sometimes the private sector, was introduced in the late 1990s as a way of promoting popular participation. At the regional scale, the Mekong River Commission has embraced an explicit agenda for public participation and consultation in its basin development planning process.

> Too often, the opportunities for participation are not matched by adequate mechanisms for public accountability.

Too often, however, the opportunities for participation are not matched by adequate mechanisms for public accountability—whereby officials, private developers and financers are held responsible for the consequences of their decisions. Many groups that joined in formal consultations about Cambodia's fisheries legislation have since become disillusioned after seeing many of their important inputs discarded without a convincing rationale from Ministry of Agriculture officials. Concerns over poor people's ability to maintain access to fishing grounds or protect their land rights in the face of speculation and legal disputes, however, remain important issues in local and national elections. In Laos and Vietnam, where no opposition parties exist, such political channels for demanding accountability are absent, so that communities and local officials must use other channels to keep government responsive to their needs. In Vietnam, nevertheless, the opportunity for independent analysis and debate over natural resource management policy issues has increased notably in recent years.

Box 3. A fragile success: Government's role in community-based fisheries management (Cambodia)

Pilot experiences with community-based fisheries management in Cambodia have shown the approach can offer significant benefits for small-scale users. For example, in Ream National Park, a series of projects supported by the United Nations Development Program (UNDP), Asian Development Bank (ADB), and Danish International Development Assistance (Danida), with technical assistance from Wetlands International and others, have helped to establish a network of community fishery organizations representing fishing families from among the 20,000-or-more residents of the area. The park includes one large river along with mangrove, *Melaleuca*, and swamp forests in the coast and estuary zones. The river and its estuary, in addition to providing habitat for such endangered species as the milky stork and estuarine crocodile, are important fishing grounds for small-scale fishers.[1] In the late 1990s, use of illegal fishing gear in both the estuary and marine zones was preventing many traditional, small-scale fishers from maintaining their livelihood, spurring protests and forcing many to resort to charcoal production and forest clearing for agriculture.

Regulations developed jointly by the communities and park management authority include limitations on small-scale gear (specifying, for example, minimum mesh sizes for crab and prawn nets), and prohibitions against the use of motorized trawlers, push net boats and motorized cockle dredges, as well as electric-shock, explosives and poison fishing. According to the regulations, minor violations in the use of small-scale gear are to be handled directly by the Fishing Committees, with first-time offenders required to receive education and sign an agreement to cease using such gear, followed by confiscation of the gear on a second violation and imposition of a fine on the third. By contrast, more serious violations must be reported to local agencies and the Park Authority. Community members also have a right to request park officials to conduct fishing patrols, and have the right to join in these patrols.[2]

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"Illegal fishing activities, particularly motorized trawling, push netting and cockle dredging have been reduced since there have been joint patrols. Small-scale fishers that used to leave the villages for other places came back as they can now catch here. Moreover… our voice has been heard so that we gain more help from local and concerned authorities, compared to when we were not united," reports a community leader from O Chrouv, one of the four communes in the park.[3]

In Siem Reap Province, the Food and Agriculture Organization (FAO) has supported the development of community fisheries organizations, beginning with pilot exercises in 1997 that expanded gradually to a total of 70,000 hectares of inundated forest under community protection and management by some 180 villages.[4] Leaders of the community

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fishery organization in Prek Sramoc Village, one of the early pilot sites in Kampong Khleang Commune, claim community efforts have resulted in a partial regeneration of forest in the floodplain surrounding the village as well as a reduction in illegal electric-shock fishing. Limited in its legal authority to enforce community regulations, the fishery organization has found that social pressure can also be an effective deterrent, and so has made a practice of posting pictures of those who violate the rules. The community management efforts, says one leader, are "good for the people, and good for nature."[5]

Despite such promising experiences, the long-term success of community-based fisheries in Cambodia is far from assured. Most of the efforts so far have been supported by large projects with significant international donor assistance, and it is not clear how the young institutions would fare without such support. In Ream National Park, as project support has declined, the community organizations appear to have lost ground. A private company has reportedly encroached on 40 hectares of the community-managed zone for use in crab fattening. In Siem Reap, the legal status of community fisheries organizations, as well as their resource tenure and management authority, are still tenuous. While recognized by the province, the community fishery organizations are still awaiting the approval of new national legislation that would clarify their rights.

With the national fisheries reform amounting to a dramatic endorsement of community-based approaches, the challenges ahead are many: to build the legal foundation for community-based management, to provide the necessary institutional support, to secure community access to resources in a reasonably healthy state, to provide mechanisms for resolving conflicts among communities and among different user groups, and to ensure that poor users have opportunities to fish and to market their fish products without an excessive burden of taxation and unofficial fees.

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4. Evans, P. and Vann Sophana, *Lessons from the 'Participatory Natural Resource Management in the Tonle Sap Region' Project*, in: *Wetlands Management in Cambodia: Socioeconomic, Ecological, and Policy Perspectives*, M. Torell, A.M. Salamanca and B.D. Ratner, Editors. 2004, WorldFish Center: Penang, Malaysia, pp. 27-29.

5. Ratner, B.D. Field notes, June 2003.

Thailand's position in the region is unique in the extent to which mechanisms of accountability are constitutionally guaranteed and actually practised in legal, judicial and political processes. The 1997 Constitution grants people who are affected by development plans the legal right not only to participate in development planning but also to dispute development decisions in the courts. One current example is the proposed Thai-Malaysian Natural Gas Pipeline, which would cross traditional fishing grounds in coastal Songkhla Province. The government has argued for the project on the basis of its broad economic benefits, while fishing communities have asserted their rights to maintain their traditional fishing practices and raised concern over other potential environmental impacts. The issue is not yet resolved.

A wetlands perspective on rural development

Given the many challenges considered above, one may reasonably ask, is it really worthwhile to approach the problems of wetlands management in such a broad fashion? There is no doubt that wetlands are valuable to rural people's livelihoods, but what is distinctive about a "wetlands perspective", and how does it improve our ability to make good decisions?

A wetlands perspective gives special attention to the livelihoods of poor people dependent upon wetlands and sets socioeconomic challenges within an ecological context.

A wetlands perspective on rural development is characterized by recognition of the multiple uses and services of wetland ecosystems, as well as the interactions between different ecosystem units and across different scales of activity. It is a perspective that gives special attention to the livelihoods of poor people dependent upon wetlands and that sets socioeconomic challenges within an ecological context. It demands that we consider not only present needs but also the future consequences of resource management decisions in terms of equity and environmental sustainability. As such, it embraces the principles of ecosystem-based management within the wetlands domain.

In the short term, there may be perceived risks with such an approach in so far as it introduces additional aspects of complexity to previous ways of doing business in a sectoral mode. It is, after all, difficult enough to translate sectoral priorities into better resource management outcomes without the additional challenge of considering interactions among sectors of the economy as well. It may also cause more institutional conflict in the short term as institutional overlaps are brought to the surface and addressed.

The early experiences of institutions that have embraced a wetlands perspective and tried to put it into practice in the region give reason to believe, however, that the promises of such an approach far outweigh the risks. While such a perspective may require a significant reorientation in thinking by development planners and official resource management authorities, it brings them closer to the perspectives of many local communities who view their natural environment holistically. Project partners at Nong Lam University in Ho Chi Minh City found that undertaking collaborative assessment of wetland values and institutional challenges has provided a useful framework for development planning at provincial and district levels in Ben Tre and Long An Provinces. In Cambodia, wetlands working groups organized at the national level and in three provinces have succeeded in building awareness and a common sense of purpose across a range of agencies representing agriculture, fisheries, environment, tourism, rural development, public works and women's affairs, among others.

"We found that focusing on fisheries management alone was not adequate to solve the problems facing fishers," recounts an official from Thailand's Department of Fisheries. The agency now pursues its mandate within a broader context that considers such issues as the influence of infrastructure, agriculture, and other land uses on the health of fisheries. Likewise, the Mekong River Commission has increasingly embraced the language of ecosystem-based management, which is proving useful in highlighting the links between conservation and poverty reduction. It also aids in raising awareness in the four countries regarding the common dependence on shared ecosystems and the importance of assessing the transboundary effects of development decisions in the basin.

A common perspective helps highlight certain challenges. It does not necessarily point to obvious solutions, nor does it guarantee the political will to tackle them effectively. In the next section, we point to four priority areas that will help to determine to what extent the promises of a wetlands perspective can be translated into effective development decisions.

An agenda for change

Creating a mandate for coordination among agencies

Improving interagency coordination depends on the extent to which the mandates of various agencies, as defined by law and government policy, are complementary, as well as the practical efforts of agency staff—from policy to field levels—to work together. Each of the four countries shows signs of progress along these lines, though important obstacles remain.

Thailand's National Sub-committee on Wetland Conservation was established in 1993 to overcome interagency conflicts and to provide guidelines for wetlands management policy and implementation. The sub-committee includes representatives from relevant natural resource-related agencies (Office of Natural Resources and Environmental Policy and Planning, Department of Fisheries, Royal Forest Department, and Department of Land Development), as well as the private sector, NGOs and independent wetlands experts. A national wetlands action plan developed by the sub-committee was approved by Cabinet resolution in 2000. With a focus on protected areas, the plan leaves unanswered many questions about the management of economically productive wetlands. A major restructuring of government ministries in 2002 has stalled coordination efforts, at least temporarily, as roles and responsibilities are redefined, and it remains to be seen whether the changes will improve agency performance as intended.

In Laos, an inter-ministerial committee has been formed to draft an integrated water resources management strategy for the planning, management, use and protection of water and water resources, to guide implementation of the Water Law. One of the committee's objectives is to define, in clearer terms, the responsibilities of various sectoral departments and so defuse disputes over questions of authority, such as the administration of major fish landing sites. In Cambodia, a new Ministry of Water Resources and Meteorology was recently established, and new water laws and policies are under consideration. While both Vietnam and Cambodia have undertaken extensive consultations to develop their national wetlands action plans, neither country has formed a standing wetlands committee. Doing so will probably be necessary, however, to ensure that policy officials pay adequate attention to wetlands management, and therefore to people's sustainable livelihoods, and that future intersectoral implementation difficulties are resolved.

> The success of community-based management efforts depends largely on local people having secure access to valuable, productive resources to maintain and improve their livelihoods.

It is also necessary to invest in strengthening the links between National Mekong Committees and line agencies as a means to improving regional coordination. Moreover, particularly in Cambodia and Laos, whose territories fall mostly within the basin, the National Mekong Committees have the potential to play a more prominent convening role for addressing national strategy questions.

Devolving authority and managing competition

Government agencies are typically most ready to yield authority for natural resources

Box 4. Dilemmas of decentralization: Local authority, conflict, and coordination in Prukuankreng (Thailand)[1]

Situated in the Thale Noi Non-hunting Area and spanning the border of Pattalung, Songkhla and Nakhon Sri Thammarat Provinces, Prukuankreng contains Thailand's largest expanse of peat swamp forest and freshwater mangroves. It includes the Kuan Khee Sian area, a Ramsar site at the northern edge of Great Songkhla Lake. The conversion of natural wetlands to paddy fields, orchards and aquaculture ponds, tree cutting for furniture and craft-making, expansion of intensive cattle grazing, and the introduction of roads and canals are all factors in the rapid transformation of this landscape. The economic opportunities associated with these new uses of the wetland zone are attracting significant numbers of migrants, contributing to the pace of change.

While many entrepreneurs are profiting, some inhabitants of the area are finding their livelihoods undermined. The poorest community members have traditionally relied on fishing, hunting and harvesting wild plants from the swamp forests, and as available common-pool resources decline, these are the people who suffer first. Many now have no option but to sell their labor wherever possible. Women who have relied on the harvest of *Lepironia apiculata*, a plant used in handicraft making and known locally as *kra-jood*, suffer a loss in income as natural stands in the peat swamps decline. Water scarcity is a growing problem as well, attributed both to climatic factors and the increased use of water in agriculture. At the Kuan Khee Sian site, where tourism has surpassed extraction of fish and aquatic plants as the main contribution to poor people's livelihoods, a loss in the aesthetic and recreational value of the wetlands could affect local incomes as well.

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Existing laws and regulations provide a clear framework for conservation, but have proved inadequate to resolve many of the practical conflicts over the use of wetland resources in Prukuankreng. For example, once the conservation areas were declared, many long-time residents found themselves to be illegal land occupants; the legal status of traditional resource claims vis-à-vis the newly designated conservation zones was never clearly defined. As a consequence, residents formed a group to fight for land rights and request compensation. The Royal Forest Department, focused on protecting the forest stands and associated wetland biodiversity, has been unable to engage community participation because it is not mandated to facilitate use of the swamp area for livelihoods. Concern about illegal fishing, including the use of electric shock gear and poison, is widespread, but villagers tend to see the government as having the main responsibility to address the problem. Non-governmental organizations have held workshops to raise awareness and encourage cooperation in a bid to halt the illegal fishing, yet powerful individuals have managed to exert their influence and evade enforcement of the law by the district fishery office and police.

The urgent challenge now in Prukuankreng is to craft regulations and institutions to better manage conflicts and foster sustainable resource use. A structural reform of government institutions, introduced at the national level in 2002, has consolidated authority under several new ministries, notably the Ministry of Natural Resources and Environment, and the Ministry of Social and Human Resource Development. Now fewer agencies are implicated in wetlands management, but the sorting out of roles and responsibilities at the local level is still underway.

The TAOs, the locus of decentralized decision-making authority, have been empowered to undertake natural resources management planning, and are being increasingly tasked with enforcement and taxation responsibilities as well, such as the collection of a fishing tax. But their capacity for conflict resolution generally remains low. Furthermore, many of the conflicts in Prukuankreng involve competing resource claims that highlight a need for coordination among communities and among districts. A research team from Prince of Songkhla University is working to strengthen the TAOs to enable them to engage in such negotiations. At the same time, the team advocates the creation of an integrated authority responsible for wetland planning and management in the area—one that would consider conservation goals jointly with local livelihoods, infrastructure development, tourism and other wetland uses.

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1. Based on Coastal Resources Institute (CORIN), *Legal and Institutional Framework Governing the Management and Use of Wetlands: A Case Study of Prukuankreng, Southern Thailand.* (Research report prepared for the Mekong Wetlands Approach project). 2003, Hat Yai, Thailand: CORIN.

management to communities in areas considered to have low economic value, or where the resource base is already significantly degraded. Yet, the success of community-based management efforts depends largely on local people having secure access to valuable, productive resources to maintain and improve their livelihoods. The implementation of decentralization reforms needs to be closely monitored to ensure that decisions about resource access and tenure are equitably made, while recognizing that there is a risk of resource capture by economic players with national political influence or by local elite.

It is also important that efforts are made to invest in the capacity of the newly-empowered local government organizations such as the TAOs in Thailand and the Commune Councils in Cambodia. These bodies need support to build their competence in the administration of funds and the process of transparent decision-making. They need an easy way to call on the expertise of local technical officers and to develop culturally appropriate skills for conflict management, given that many disputes can be handled quite effectively at the local level (see Box 4).

Because wetlands cross administrative boundaries, however, mechanisms for managing resource competition at higher administrative levels are also needed. Clarifying the legal and institutional framework around wetlands, so that the roles of various agencies are better defined, can partially address this need. It is also important to recognize the potential for various informal networks to improve coordinated action and manage conflicts. Religious networks can play a crucial role in mobilizing community interests as shown by the Cham minority in Cambodia's Ream National Park. In other cases, the key to managing conflicts comes from recognizing the interests of a network of people who use a resource in a specific way, even if they are quite dispersed. Such is the case with the beekeeper groups who, through negotiation, have maintained their access to *Melaleuca* forests in Vietnam's Song Trem and Ca Mau Provinces after the allocation of state forest land to individual management.[9]

Box 5. At the margins: Weighing the relative values of mangroves and shrimp farms in Thanh Phu District (Vietnam)

As part of its national program to reforest five million hectares of degraded forest land, the Vietnamese government offers incentives to individual families to protect designated plots of forest land that had previously been managed directly by state agencies and state enterprises. But in areas where alternative uses are lucrative, the incentives for forest protection are often inadequate. Nowhere is this clearer than in coastal mangrove zones, which are experiencing a rapid expansion of shrimp aquaculture.

B.Ratner

Officials in Thanh Phu District, Ben Tre Province, are eager for information that can help them introduce appropriate zoning and limits on mangrove conversion so that the shrimp industry can be sustained over the long term. But what is the value of conserving mangrove forest? Official data on agriculture, fishery, and forest production are not particularly useful in answering the question, as such data are typically based on average production figures reported by commune and district level officers without the benefit of household surveys. They also reveal nothing about how wetland resources are valued differently by different groups, nor about the economic dynamics that motivate the exploitation of wetland resources.

A study team from Nong Lam University, Ho Chi Minh City, set out to fill these gaps by developing a valuation exercise tailored to the questions facing local decision-makers. Results of household surveys and discussions with key informants yielded an estimate for the partial economic value (including some indirect uses) of protected mangrove forest of between US$1,793 and $2,343 per hectare per year. This is higher than the average annual income estimated from extensive shrimp farming ($1,347), but lower than that of semi-intensive shrimp farming ($3,613), and much lower than intensive shrimp farming ($17,067).[1] The research team was quick to explain, however, that while these income figures include the direct on-farm costs of shrimp production, they do not include the indirect social and environmental costs, including water pollution and declines in fishery productivity. Given the importance of healthy mangroves to shrimp production, the conversion of additional mangrove areas to intensive shrimp farming would be expected to produce both a decline in marginal income per hectare and an increase in the risk of failure due to pollution and disease outbreaks throughout the system.

Dang Thanh Ha

The study also revealed important differences in stakeholder perception regarding the importance of mangrove forest conservation. Farmers within the protected forest zone, particularly the poorer farmers, place more value on direct uses such as the harvesting of aquatic products from the flooded forest. In contrast, outside the protected zone, shrimp farmers put a high value on the water-quality maintenance functions of mangrove forests for supporting their commercial shrimp farming. Nevertheless, few shrimp farmers are willing to bear the costs of maintaining mangrove forests on their own land.[2]

The challenge in Thanh Phu and similar areas along Vietnam's coastal zone is to find ways to allow those who carry the burden of conservation to receive more of the benefit, and for those who benefit to absorb more of the cost. Households charged with forest protection are permitted to harvest wild fish, shrimp and other aquatic products from their allotted plots, and receive official payment of 50,000 Vietnamese Dong (less than US$4) per hectare per year. These direct benefits pale in comparison to the social and economic value of the environmental services provided. Local planning initiatives, supplemented by research, can build awareness about the value of wetlands and the perspectives of different stakeholders. The hope is that they will also lead to strengthened incentives to sustain both the resource base and the economy while ensuring that the costs of this effort are more equitably shared.

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1. Nong Lam University, *Policy, Legal and Institutional Framework and Economic Valuation of Wetlands in the Mekong River Delta: A Wetland Approach*. (Research report prepared for the Mekong Wetlands Approach project). 2003, Ho Chi Minh City, Vietnam, pp. 28-29.

2. Ibid., pp. 27-29.

Valuing wetlands with a focus on livelihoods

Policy officials, resource managers and other stakeholders make rough, working assumptions about the value of wetland resources every day, often on the basis of poor information. Investing to improve that information base can be very useful, provided that decision-makers are engaged from the start in defining what information is needed, and that the valuation process is tailored to meet those needs. Early experiences with wetlands valuation in the Mekong region are yielding several lessons about how to put such principles into practice.

First, decision-makers should define the relevant scale for a valuation exercise depending on its intended uses. For example, officials in Thanh Phu District, in Vietnam's Ben Tre Province, wanted to better understand the trade-offs between protecting mangrove forests versus converting them to shrimp farming, so a team from Nong Lam University designed a study that would include both use types within a single ecological zone (see Box 5). To reflect the natural dynamics of wetlands, ecosystem-based units (e.g., watershed or sub-basin) are preferable to administrative units (e.g., district or province) as a basis for analysis. Some policy questions regarding, for example, the cumulative environmental impact of large dams, or the socioeconomic impact of agricultural pollution, require analysis at a large geographic scale to grasp the magnitude of the issue. However, conducting detailed site studies to directly address such questions is not technically or financially feasible. Extrapolating values from one study site to other areas on the basis of similar ecological and socioeconomic characteristics is thus necessary, and is one reason why efforts to develop a system for designating wetlands types and uses within the region merit support.

Second, valuation work should provide information about both the perceptions that different stakeholders have about the resource system as well as quantitative estimations of its economic value. Well-presented information about wetland uses, which is not normally captured in official records, can be essential to put the quantitative estimations in context.

Even where studies are able to generate new, detailed data, some of the values associated with wetlands, due to cultural or religious significance, are impossible to translate meaningfully into economic terms. In other instances, the contribution of wetland resources to the nutritional and health status of local residents or more distant consumers is much more compelling evidence of their importance than would be conveyed by judging only the market value of those same resources.

Development agencies can assist in the analysis of alternatives to the large infrastructure projects that most imperil the future sustainability of the region's wetland ecosystems.

Third, the process of conducting valuation work should itself be seen as a means of building shared understanding about wetlands and their importance. Indeed, for responsible decisions to be made, stakeholders need to be engaged in an open dialogue about the multiple values of wetlands as seen from different perspectives. In Cambodia, the Department of Fisheries, the Ministry of Environment, Wetlands International and the World Conservation Union (IUCN) took the lead in organizing a series of "scoping" workshops in which provincial officials from various departments compared their knowledge about local wetland uses and values. Even before follow-on field studies had been conducted, these exercises proved valuable in developing awareness and improving communication among provincial departments.

Improving stakeholder participation and public accountability in the policy process

Promoting better understanding of the multiple values of wetlands is useful in its own right, but specific measures are also needed to ensure that this understanding is reflected in policy formation and implementation. In particular, there is a need to build mechanisms that integrate poor people's interests more consistently in development planning decisions.

On the one hand, this entails providing appropriate forums and building capacity among local resource users to engage in policy discussions. A wetlands team convened in Laos under the leadership of the Department of Livestock and Fisheries decided to produce a booklet for broad dissemination, responding to the need to create a common basis of understanding about the meaning of wetlands, the diversity of wetland types in their country, and some of the policy issues at stake. The booklet was distributed to ministries, provincial and district offices in all provinces, as well as schools throughout the country, and was widely praised for conveying information in an accessible format—in the Lao language. It is too early to say whether this small effort will influence, for example, deliberations about the new water resources management decree, but it is clearly a step in the right direction.

On the other hand, strengthening mechanisms by which public officials are actually held accountable to local resource users for their decisions requires more than open consultations. It also requires transparency in the policy decision process, encouraged by laws on public disclosure and a free media. It requires freedoms, specified in law and protected in practice, for all groups to peacefully organize and present their views. And it requires a functioning judicial system that protects such individual and collective rights.

A shared responsibility

The agenda described here for improving the governance of wetlands in the Mekong region points to actions required on the part of many groups. Governments must take primary responsibility for clarifying and improving the distribution of authority for wetlands management, creating a mandate for interagency coordination and partnership between government and community actors. By demonstrating their ability to balance local needs against concerns for resource sustainability and the needs of other resource users, wetlands communities can provide examples of successful management, which can form the basis for wider policy and institutional reform. NGOs can be effective advocates for local resource rights, supporters of local institutional capacity, and conduits of community interests in national and regional policy development. Academic institutions and research institutes can promote research and analysis that builds understanding about the potential livelihood impacts of changes in wetlands ecosystems. Development agencies can help promote governance reforms by assisting in the analysis of policy options—particularly in the search for alternatives to the large infrastructure projects that most imperil the future sustainability of the region's wetland ecosystems; they can also promote civil society involvement and regional cooperation. Just as wetlands cross boundaries, so too must efforts to improve their management be seen as a shared responsibility.

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Notes

1. This report builds on and synthesizes information from papers produced by working groups in each of the four countries that address the national policy frameworks and incorporate the results of field surveys, local consultations and several more detailed field studies. The working groups conducted reviews of secondary sources and held several consultations during 2002 and 2003 with participation from government agencies representing a variety of sectors relevant to wetlands management, academic institutions and non-governmental organizations. The groups also organized provincial-level and local-level consultations in two or three provinces in each country: Savannakhet, Champassak and Attapeu (Laos), Long An and Ben Tre (Vietnam), Stung Treng, Siem Reap and Takeo (Cambodia), and Surin, Buriram and Pattalung (Thailand). Detailed field studies employing household surveys and stakeholder interviews were conducted in Prukuankreng, Thailand, and Thanh Phu District of Ben Tre Province in Vietnam, each of which is summarized here. An edited collection of these papers, with a more detailed discussion of the methodology employed in each, will be disseminated by the WorldFish Center as a companion to the present policy brief.

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